

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/043227

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B01D35/027 B01D35/153 B01D35/147

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B01D F15B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 772 868 A (REINHARDT ET AL) 30 June 1998 (1998-06-30) the whole document -----	1,4, 12-14
A	DE 101 13 179 A1 (RT-FILTERTECHNIK GMBH) 26 September 2002 (2002-09-26) the whole document -----	1,4, 12-14
A	FR 2 796 567 A (BERLY) 26 January 2001 (2001-01-26) figure 4 -----	19,22
A	EP 0 844 012 A (DENSO CORPORATION) 27 May 1998 (1998-05-27) figure 1 -----	19,22
A	AU 503 758 B2 (CARBORUNDUM CO., THE) 20 September 1979 (1979-09-20) figures -----	19,22

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

30 June 2005

Date of mailing of the international search report

08. 07. 2005

Name and mailing address of the ISA

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-18

A liquid filter assembly comprising:

- a housing having a liquid flow inlet arrangement; a first circulation loop for the liquid flow; a liquid flow outlet arrangement; and a tank reservoir liquid flow inlet / outlet;
- a suction filter assembly comprising a first, non-helical spring, directionally biased valve arrangement comprising a ring shaped valve member having at least one cut valve therein positioned.

2. claims: 19-22

A filter cartridge comprising:

- a primary filter cartridge section;
- a bypass filter cartridge section;
- a first end cap positioned between the primary filter cartridge section and the bypass filter cartridge section;
- a second end cap positioned at an opposite end of the primary filter cartridge section from the first end cap.

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5772868	A	30-06-1998	DE 19511482 A1 WO 9630654 A1 EP 0782673 A1	02-10-1996 03-10-1996 09-07-1997
DE 10113179	A1	26-09-2002	NONE	
FR 2796567	A	26-01-2001	FR 2796567 A1	26-01-2001
EP 0844012	A	27-05-1998	JP 10146503 A JP 11028319 A DE 69724076 D1 DE 69724076 T2 EP 0844012 A2	02-06-1998 02-02-1999 18-09-2003 09-06-2004 27-05-1998
AU 503758	B2	20-09-1979	AU 1517376 A	05-01-1978

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